

Geometry 8.2 Notes

Problem Solving in Geometry with Proportions (pp 465-467)

1. The *geometric mean* of two positive numbers a and b is the positive number x such that $\frac{a}{x} = \frac{x}{b}$. Solve this proportion for x .

2. Use a calculator to complete the table for the proportion $\frac{a}{x} = \frac{x}{b}$.

a	b	x
5	20	
2	13	
6	8	
12	3	
11	11	
1	9	
30	7	
9	12	
	8	4
2		8
	25	5
14		14
	5	15
4		6

3. What must be true of the product $a \bullet b$ if x is a whole number?

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4. Find eight different pairs a and b with a geometric mean of 12.

Proportion:

Properties of Proportions.

Examples: True or False.

5. _____ If $\frac{s}{10} = \frac{15}{t}$, then $\frac{s}{t} = \frac{3}{2}$.

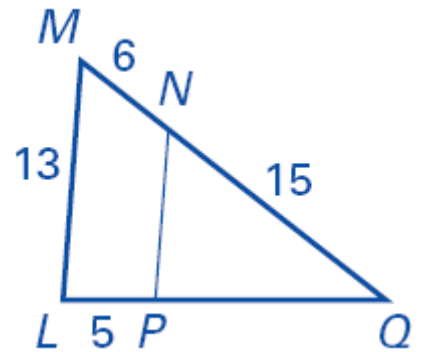
6. _____ If $\frac{3}{x} = \frac{5}{y}$, then $\frac{3+x}{x} = \frac{5+y}{y}$.

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7. _____ **Guided Practice.** True or False: If $\frac{3}{b} = \frac{d}{7}$, then $\frac{3+b}{d} = \frac{d+7}{b}$.

8. **Example:** In the diagram $\frac{MQ}{MN} = \frac{LQ}{LP}$. Find the length of LQ .



9. **Guided Practice.** Use the same diagram. If $\frac{LM}{PN} = \frac{MQ}{NQ}$, find PN .

10. **Example:** Find the geometric mean between 35 and 175.

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11. Guided Practice: Find the geometric mean between 36 and 128.

12. Example: You are building a scale model of your uncle's fishing boat. The boat is 62 ft long and 23 ft wide. The model will be 14 in. long. How wide should it be?

Guided Practice.

13. The mast of your uncle's fishing boat from the previous problem is 30 feet tall. How tall should the mast be in the model?

14. The geometric mean of 12 and another number is 30. What is the other number?

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15. If x is the *geometric mean* of two positive numbers a and b , write a proportion that relates a , b , and x .

